

What is claimed is:

1. A clamping apparatus, wherein

a first block (1) is provided with a support surface (S) that receives a supported surface (2a) of a second block (2),

5 a drive member (11) is inserted into the first block (1) axially movably,

a pull rod (18) is projected toward a leading end beyond the support surface (S) of the first block (1), and the pull rod (18) is connected to the drive member (11),

10 an inner engaging member (38) is arranged on an outer periphery of the pull rod (18) axially movably, the inner engaging member (38) is adapted to be radially movable with respect to the first block (1), and the inner engaging member (38) is adapted to be advancable toward the leading end by pressing means (41),

15 a plurality of outer engaging members (39) to be inserted into an engaging hole (3) of the second block (2) are arranged on an outer periphery of the inner engaging member (38), the plurality of outer engaging members (39) are adapted so as to wedge-engage with the inner engaging member (38) from the leading end side, and an output portion (46) of the pull rod (18) is connected to these outer engaging members (39), and

20 the plurality of outer engaging members (39) are adapted to be radially inwardly movable by returning means (44).

2. The clamping apparatus as set forth in claim 1, wherein

25 a cover member (31) that covers the plurality of outer engaging members (39) from the leading end side is provided on a leading end portion of the pull rod (18).

3. The clamping apparatus as set forth in claim 2, wherein

a guide surface (36) that narrows toward the leading end is formed on an outer periphery of the cover member (31).

4. The clamping apparatus as set forth in claim 2, wherein

the cover member (31) and the plurality of outer engaging members (39) are connected radially relatively movably and axially movably together.

5. The clamping apparatus as set forth in claim 4, wherein

the plurality of outer engaging members (39) are supported on a
5 peripheral wall (31a) of the cover member (31) radially movably.

6. The clamping apparatus as set forth in claim 1, wherein

the first block (1) is provided with a plurality of the support surfaces (S)
circumferentially at intervals, and

with a gap between the adjacent outer engaging members (39) and (39) is
10 formed a discharge port (51) for a cleaning fluid, and the discharge ports (51) are
directed toward the support surfaces (S) respectively.

7. The clamping apparatus as set forth in claim 1, wherein

the pull rod (18) is urged toward the leading end by a balancing elastic
member (27).

15 8. The clamping apparatus as set forth in claim 1, wherein

the pull rod (18) is connected to the drive member (11) radially movably.

9. The clamping apparatus as set forth in claim 1, wherein

the inner engaging member (38) is arranged radially movably with respect
to the pull rod (18).